

*PATCHED GENES AND THEIR USES*

## ABSTRACT OF THE INVENTION

Methods for isolating patched genes, particularly mammalian patched genes, including the mouse and human *patched* genes, as well as invertebrate patched genes and sequences, are provided. Decreased expression of *patched* is associated with the occurrence of human cancers, particularly basal cell carcinomas of the skin. The cancers may be familial, having as a component of risk an inherited genetic predisposition, or may be sporadic. The *patched* and *hedgehog* genes are useful in creating transgenic animal models for these human cancers. The *patched* nucleic acid compositions find use in identifying homologous or related proteins and the DNA sequences encoding such proteins; in producing compositions that modulate the expression or function of the protein; and in studying associated physiological pathways. In addition, modulation of the gene activity *in vivo* is used for prophylactic and therapeutic purposes, such as treatment of cancer, identification of cell type based on expression, and the like. The DNA is further used as a diagnostic for a genetic predisposition to cancer, and to identify specific cancers having mutations in this gene.

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